

REMARKS / ARGUMENTS

In the detailed action, the Examiner noted that claims 1-29 are pending in the application and that claims 14-29 were withdrawn from further consideration pursuant to the election requirement. By this Response, the Applicant has cancelled claims 14-29 without prejudice. With the cancellation of claims 14-29, the addition of new claims 30-39 do not require the payment of any excess claim fees.

On page 2 of the detailed action, the Examiner acknowledged applicant's claim for priority. The Examiner requested that a statement indicating this priority be set out as the first sentence of the specification. By this Response, the applicant has amended the specification as requested by the Examiner. Accordingly, the applicant respectfully submits that the priority claim is now complete.

In the Office Action, the Examiner rejected claims 1, 4 and 5 as being unpatentable over Smith, Jr. et al. In discussing Smith, Jr. et al, the Examiner noted on page 4 of the Office Action, lines 4-6, that at column 2, lines 13-20 of this reference, it teaches that the amount of water must be controlled because too much water will cause the product alcohol to contain water and also decrease the reaction rate relative to the amount of excess water. Therefore, the Examiner concluded that it would have been *prima-facie* obvious to one having ordinary skill in the art, at the time the invention was made, to produce alcohol as claimed in the instant application because Smith, Jr. et al teaches a process for the production alcohol by catalytic distillation and the simultaneous recovery of the alcohol as a substantially anhydrous liquid. The Examiner stated that one having ordinary skill in the art, desiring to obtain the maximum results from the process of Smith, Jr. et al would have been motivated to decreases the amount of water used in the hydration reaction so as to eliminate water from the product alcohol while increasing the reaction rate.

The applicant has carefully considered the rejection raised by the Examiner and thanks the Examiner for the detailed reasoning provided in the Office Action. In considering the teaching of Smith, Jr. et al, the Examiner is referred to column 3, line 65-column 4, line 5 of this reference where it is provided as follows:

If too much water is used, the product will contain water, if too little is used, oligomerization of the olefin will occur. One method of controlling the necessary amount of water is to measure the amount of the water in the alcohol fraction within the lower section of the column and to maintain that amount above zero but below the azeotropic concentration at the temperature and pressure used.

Accordingly, Smith, Jr. et al teaches that if too little water is utilized, oligomerization of olefin will occur. Accordingly, one skilled in the art would appreciate from reading Smith, Jr. et al there is an amount of water which must be used in the hydration reaction. In fact, as shown in run A-II 46 of Table 1, when no water was added to the feed (100

weight percent isobutylene in the feed), the process of Smith, Jr. et al, resulted in a conversion rate of less than 50%.

In accordance with one embodiment of the instant invention, a high concentration of olefin is dissolved in the reactor mixture. This is achieved by maintaining a high level of the corresponding alcohol in the reaction mixture. Alkenes do not dissolve well in reaction mixtures having a significant water content. However, they do dissolve in mixtures with a high content of the corresponding alcohol. Pursuant to this embodiment of this invention, the product from the hydration reaction is feed to a re-boiler. In the re-boiler, the volatile compounds are volatilized and returned to the hydration reaction. As a result, a relatively anhydrous product alcohol stream is obtained from the process. (see page 14, lines 16-28 of the application)

Accordingly, applicant has amended claim 1 by inserting new step (b). Step (b) is directed towards recovering a product stream containing alcohol and volatile components from step (a) of claim 1 and subjecting this stream to heating to return the volatile compounds to step (a) for further processing.

Accordingly, in accordance with this aspect of the invention, the liquid phase of the process has a much higher alcohol content than that of Smith, Jr. et al. Accordingly, the amount of alkene dissolved in the liquid phase is higher and this increases the concentration of alkene at catalyst sites to a higher level than in Smith, Jr. et al. Accordingly, the reaction to form alcohol occurs as the preferred reaction in accordance with the process claimed in claim 1. A further benefit of the instant process is that the amount of by products (e.g. dimers of the alkene) occur to a much lower extent.

Accordingly, the applicant respectfully submits that claim 1 as amended hereby is not obvious in view of Smith, Jr. et al.

In the Office Action, the Examiner rejected claims 6-11 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter with the applicant regards as the invention. In particular, the Examiner stated that claim 6 recites a limitation "the feed ratio" in line 1 thereof. The Examiner stated that there was insufficient antecedent basis for this limitation in the claim. Applicant has amended claim 6 hereby to address the issue raised by the Examiner.

In the Office Action, the Examiner objected to claim 2 but noted that the subject matter of claim 2 is unobvious over the prior art of record. Accordingly, the applicant has inserted herein new claim 30. Claim 30 was prepared by combining claims 1 and 2. Accordingly, it is respectfully submitted that claim 30, and the claims dependent thereon, are allowable over the art of record. The Examiner is advised that dependent claims 32-39 correspond to dependent claims 3-11 of the instant application. Accordingly, no new matter has been added.

On page 6 of the Office Action, the Examiner noted that the Oath or Declaration is defective and requested the provision of a new Oath or Declaration. The applicant is

currently obtaining from the inventors the required Oath or Declaration. Unfortunately, the Oath or Declaration was not available at the time of filing of this Response. The Oath or Declaration will be filed as soon as it is received from the inventors.

In view of the forgoing amendments and comments, the applicant respectfully submits that the application is now in condition for allowance. Favourable consideration is respectfully requested.

Respectfully submitted,

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